Overview of Toxicity Risks to Migratory Adults and Juveniles

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Lake Union is a highly modified waterbody lying with the city of Seattle through which chinook salmon traverse. For this talk Lake Union is defined as going from the Montlake Cut to the Ballard Locks.

To assess the potential impacts of toxics on chinook salmon the county has been collecting inadvertent mortalities and analyzing the whole fish for PCBs, TBT, Mercury, Lipids, and Total Solids.

In addition we have collected resident fish and crayfish from Lake Union in 1991, 1997, and 1999 and analyzed raw edible tissue for these same parameters.

A review of biweekly samples from 1991 and the quarterly samples from the last five years of routine monitoring was made for any exceedances of acute fresh water quality criteria.

Use of these data revealed the following:

- Class 1 and Class 0 hatchery chinook had similar concentrations for PCBs.
- Juvenile sockeye entering Lake Union had significantly higher concentrations for PCBs and Hg over juvenile chinook.
- There was no apparent increase in PCBs, Hg or TBT values as a result of traversing Lk. Union
- All whole body values for PCB, Hg, and TBT were well below (one to three orders of magnitude) NOEL values for juvenile chinook
- Resident fish and crayfish had roughly an order of magnitude higher edible tissue concentrations over juvenile chinook.
- All of the resident fish and crayfish were below LOEL for fresh water fish for PCB, TBT and Hg.
- A single dissolved zinc value from the quarterly five year period taken from Salmon Bay exceeded the acute criteria. All other samples had a concentration that was at least six times less.
- A number of dissolved copper values from the Salmon Bay area approached the acute toxicity threshold and seven exceeded the chronic criteria. The high values were mostly associated with dry weather during the fall months of Sept. and Oct. While probably not a significant issue for chinook this may be an issue for resident fish within Salmon Bay.